

O. Arroyo Chub
(*Gila orcutti*)

Status: State Species of Special Concern.

SCR Monitoring and Conservation Highlights in 2002: Several populations of arroyo chub are routinely surveyed during exotic fish removal and standard surveys. Several waterways which are occupied by arroyo chub are regularly evaluated for exotic presence. These streams include San Juan Creek, upper and lower Rainbow Creek, San Francisquito Creek and Bell Canyon Creek. The San Juan Creek population represents some of the largest individuals. However, this stream also possesses several aquatic exotic species. In fact, it has been observed that arroyo chub appear to be able to co-occur with exotics regularly. This does not mean that negative impacts are not present. The San Francisquito population of arroyo chub is regularly infested with external parasites introduced through exotic release.

Monitoring Methods: Fish were collected using beach seines and back pack electro-fishing equipment. Several areas were repeatedly seined, the fish were counted and measured and visually examined for parasites. Fish that were found to be infected were collected and sent to SDSU. Un-infected fish were released back into the creek after data collection.

Biological Information: The arroyo chub has been shown to physiologically adapt to survive hypoxic water conditions and wide temperature fluctuations common in south coast streams. A majority of the individuals observed during the 2002 season were seen in relatively cool, clean water, with adequate to good dissolved oxygen content.

P. Other Species

SCR issued and is tracking research and monitoring MOUs for the following other sensitive species: Black Skimmer (two issued), Elegant Tern (two issued), Summer Tanager (one issued); California Horned Lark (two issued); California Gnatcatcher (two issued), Southwestern Willow Flycatcher (one issued), Least Bell's Vireo (one issued), Santa Catalina Island Shrew (one issued in early 2003), Channel Island Spotted Skunk (two issued).

III. NCCP PLANS/REGIONAL CONSERVATION PLANS

The SCR was the region selected for the original NCCP "pilot program" plans focused on regional conservation of the coastal sage scrub ecosystem. As the plans have progressed, the conservation vision has broadened for all of these plans to encompass a wide array of additional habitats and species. There are a number of NCCP plans, or components of plans known as "subarea plans", that are completed or under development within San Diego, Orange and Los Angeles Counties. The SCR Habitat Conservation Planning staff

is responsible for NCCP plan development, in coordination with the USFWS and local jurisdictions.

An important, and required, element of each of the NCCP plans is a biological monitoring plan. The Monitoring Team, in coordination with the SCR Habitat Conservation Planning staff, plays a large role in the development and implementation of monitoring plans for NCCP plans. Monitoring issues were particularly important during 2001-2002 for three NCCP plans: 1) the Orange County Central/Coastal NCCP Plan (OCCCP), 2) the Multiple Species Conservation Plan (MSCP) – south San Diego County, and 3) the Multiple Habitat Conservation Plan (MHCP) – north San Diego County. Both the OCCCP and the MSCP are approved plans that are currently in the process of being implemented. Initial monitoring plans are in place, but are being re-evaluated for adequacy. Sampling protocols and selection of species/habitats for monitoring are being studied through various pilot monitoring efforts. The results of these efforts will be analyzed and assessed for adequacy, and modifications incorporated to improve the monitoring effort. In contrast, the MHCP is in the final stages of plan approval, and there was a significant effort during 2001-2002 to craft a comprehensive monitoring plan for this regional conservation plan. Lessons learned during the development of earlier monitoring plans were incorporated into this new plan. The following summaries recap the key biological monitoring accomplishments or developments of each of the above planning efforts:

A. Orange County Central/Coastal Plan (OCCCP)

The OCCCP was approved in 1996. After the plan was approved a monitoring plan was developed under the auspices of the Nature Reserve of Orange County, the non-profit entity established by the plan to oversee preserve monitoring. A systematic sampling protocol was established to sample selected species or species groups throughout the preserve system to assess population trends, especially as they related to habitat fragment size and urban/natural land edge effects. The monitoring plan proposed to collect data on these selected species for three to five years and then conduct an analysis of the results. The analysis would determine whether the sampling protocols were adequate to answer the monitoring questions being asked by the plan. Any necessary corrections would be made based upon the monitoring results.

In 2001-2002, data collection to assess monitoring plan adequacy continued to be done. Table 2, below, summarizes the status of the monitoring efforts to date. With the exception of the raptor monitoring studies, all of the monitoring programs listed were funded in part or in total by the Department, although not directly carried out by the SCR Monitoring Team.

B. Multiple Species Conservation Plan

The MSCP has five jurisdictions with approved “subarea plans” within the MSCP subregion: City of San Diego, City of Poway, City of Coronado, City of La

Mesa, and the County of San Diego. Two additional jurisdictions are in the process of completing their plans: the City of Chula Vista and the City of Santee. The City of Poway completed its NCCP plan in 1996, the City of San Diego in 1997, and the County of San Diego in 1998. Of the five jurisdictions that have completed their MSCP “subarea plans”, these three have the vast majority of the native habitat lands remaining. The Cities of Chula Vista and Santee will also add important areas of natural lands once their plans are completed (scheduled for completion in 2003).

The MSCP plan created a monitoring plan (Biological Monitoring Plan for the Multiple Species Conservation Program, Ogden Environmental, April 1996) to assess the status of the preserve system created under the plan, and to provide guidance for an adaptive management program. As a number of the protocols proposed in the monitoring plan have been tested in the field it has been found that they do not all function in the manner intended, and changes have been proposed. It was anticipated that the original monitoring program would need to adapt to new information and changing circumstances, and this process is currently underway with this monitoring plan. The City and County of San Diego are actively engaged in monitoring projects as required under the MSCP. A number of the monitoring efforts underway have been funded by the Department, and these are the programs that will be discussed in this report. Table 3 lists the Department contracted projects that funded monitoring efforts during the 2001-2002 period.

In addition to the funding of monitoring projects, the Department has also funded the development of a number of management plans for preserve lands under the purview of other jurisdictions within the MSCP. These include: Carmel Mountain/Del Mar Mesa, San Pasqual Valley, and the San Diego River within the City of San Diego; and the San Vicente Property within the County of San Diego. The Department has also funded the development of three management plans for three preserve areas within the City of Chula Vista.

As a contribution to adaptive management within the MSCP, the Department has funded several habitat restoration projects:

- San Diego thornmint weed eradication – City of San Diego
- Coastal sage scrub restoration (Brammer parcel) – City of San Diego
- Willowy monardella restoration (Lopez Canyon) – City of San Diego
- Otay Mesa Vernal Pool Restoration – City of San Diego

Table 2. Status Report: Biological Monitoring Program
Nature Reserve of Orange County
December 2002 (Source: The Nature Conservancy)

Study	Number of Sites/Plots	Locations	Years Implemented	Annual Cost	Reports Prepared/ Data Analysis Status
CA Gnatcatcher & Cactus Wren	40 20-HA plots CSS Stratification: Core, Edge, Fragment	Across Entire Reserve	1998-2002 <u>4 years data</u>	\$40-60K	1998 1999-2001 in prep. 3 year baseline data analysis underway¹.
Reptiles, Amphibians & Ants	90 arrays 45 CSS 9 Oak Woodland 8 Grassland 8 Chaparral Stratification: Core, Edge, Fragment	Limestone UCI Weir Canyon Peters Canyon, Rattlesnake, SCE, Orange Hills CCSP/LCWP Aliso-Wood	1995-2002 1995-2002 1998-2001 1998-2001 1998-2001 1998-2002 1999-2002 1999-2002 <u>3-4 years data</u>	\$45-90K	1998-99, 2000, 2001 in prep. 3 year baseline data analysis needed – was delayed by budget reductions.
Carnivore/Lg Mammal	20+ Track./Camera Transects Stratification: Core, Edge, Fragment	Limestone/Whiting SCE Loma Ridge Weir Canyon Irvine Park/Santiago Crk Peters Cyn, Orange Hills CCSP/LCWP Shady/Bommer Salt Creek Buck Gully, Syc Hills UCI	1998-2001 1998 1998-2001 1998-2001 1999-2001 1999-2002 1998-2001 1998-2001 1998, 2000-2001 2000-2002 1998, 2000-2001 <u>3 years data</u>	\$30-50K	1998, 1999, 2000 2001, 2002 3-year baseline data analysis needed.

MAPS <i>Monitoring Avian Productivity and Survivorship</i>	10 at CSS/OW Ecotone Goal: 12 sites Stratification: Core, Res Edge, Road Edge	Weir Canyon (2) Irvine Park LCWP (Lil. Syc Cyn) LCWP (Laurel Cyn) Aliso/Woods LCWP/Sycamore Hills LCWP (Boat Cyn) Round Cyn/Limestone Whiting Ranch	1998-2002 1998-2002 1998-2002 1998-2002 1999-2002 2001, 2002 2001, 2002 2001, 2002 2001, 2002 <u>2-4 years data</u>	\$50K	1998/99 2000, 2002 2002 in prep. 1 more year of data needed prior to baseline data analysis.
Raptors	40 Nest Sites Red-tailed Hawk, Red-shouldered Hawk, Burrowing Owl, Great- horned Owl, No. Harrier, White- tailed Kite	Scattered Across Reserve	1998-2001 <u>4+ years data</u>	\$25K	2000 Letter Report No data ever provided or analyzed; Need data presented, mapped into GIS, and analyzed if to move forward on study.
Small Mammals	24 7x7 Grids Stratification: @ reptile sampling locations Core, Edge	Aliso Woods San Joaquin Hills- West	2002 start <u>1 year data</u>	\$47K	1 st year data collection complete – 1 more year of study possible.
Vegetation	90: At all reptile/ant/small mammal plots (?)	Not started yet		\$40- 90k?	Pilot study for 2003?

**Table 3. Department Funded Monitoring Projects
within the MSCP 2001-2002**

Jurisdiction/Entity	Monitoring Study	Purpose	Start – End Date
City of San Diego	Burrowing Owl	Assess status of Burrowing Owl within the City	1/1/01 – 3/31/03
City of San Diego	Rare Plant Assessment	Gather baseline data on rare plants in the area of Black Mtn.	1/1/01 – 3/31/03
City of San Diego	Herptile and Ant Monitoring	Carmel Mtn., Del Mar Mesa	1/1/01 – 3/31/03
City of Poway	Wildlife Corridor Monitoring	Assess status of key MSCP wildlife Corridors in Poway & City of San Diego, assess wildlife use.	4/1/00 – 12/31/01
County of San Diego	Coastal Sage Scrub bird monitoring in Lakeside Linkage	Assess wildlife status on 2 County-owned parcels in Lakeside Linkage (esp. Calif. Gnatcatchers)	4/1/00 – 4/30/02
County of San Diego	Calif. Gnatcatcher distribution study in the Lakeside Linkage	Assess whether gnatcatchers cross the I-8 freeway, using banded birds.	2/1/01 – 3/31/03
County of San Diego	Use of Aerial Digital Imaging to assess habitat quality	Test whether multi-spectral ADAR imagery is useful in assessing habitat quality and changes.	4/1/00 – 3/31/02
County of San Diego	Sensitive Plant Monitoring	Conduct surveys for sensitive plant species in Hollenbeck Cyn, Santa Fe Valley, 4S Ranch, McGinty Mtn, Otay Lakes and San Vicente properties.	4/1/00 – 4/30/02
County of San Diego	Arroyo Toad and SW Pond Turtle Monitoring	Assess status of Arroyo Toad & Pond Turtle in MSCP.	1/1/02 – 3/31/04
County of San Diego	Bat Assessment and Monitoring	Assessment of bat populations within the MSCP preserve.	1/1/02 – 3/31/04
City of Chula Vista	Baseline Biological Surveys of Open Space	Conduct baseline biological surveys of 1,350 acres of preserved natural lands within City.	1/1/02 – 3/31/04

Conservation Biology Institute	Wildlife Corridor Monitoring	Continuation of corridor monitoring program of selected MSCP corridors in Poway and San Diego begun by the City of Poway.	1/1/01 – 3/31/03
Conservation Biology Institute	Regional Corridor Monitoring	Monitor corridors in Lusardi Ck, Black Mtn, and Otay Mesa; assess status of general regional corridor monitoring program; look at road kill data.	1/1/01 – 3/31/03
San Diego State University	Index of Biological Integrity	Creation of an Index of Biological Integrity for coastal sage scrub as a tool for monitoring habitat quality.	1/1/00 – 10/31/04
The Nature Conservancy	Carnivore Movement Simulation Modeling	Create a model to predict carnivore movements and wildlife corridor usage.	1/1/02 – 3/31/04
San Diego State University/USGS	Monitoring Protocol Review and Refinement for Herptiles, and Pilot Program for a Regional Database	Create working biological database using existing herp data. Assess as pilot program for other data, and analyze herp data for improvements in sampling design.	1/1/02 – 3/31/04
San Diego Natural History Museum	San Diego County Bird Atlas	Assist with data analysis and production of the County-wide bird atlas. Data analysis incorporates five years of breeding and winter season observations.	1/1/02 – 3/31/04
Wildlife Research Institute	MSCP Raptor Monitoring	Assess status of MSCP-covered raptors within the MSCP area, and propose long-term monitoring protocols.	1/1/01 – 4/30/03

C. Multiple Habitat Conservation Plan

The Multiple Habitat Conservation Program (MHCP) is anticipated to be completed and approved during 2003. During 2001-2002, much time was devoted by the Department, in concert with other agencies and consultants, in development of the MHCP Monitoring Plan. A draft plan is nearing completion, and focuses on two areas of monitoring: subregional effectiveness of the preserve system, and adaptive management of the preserve. Specific monitoring protocols for specific species or taxonomic groups have been developed for the monitoring plan. The Department will also be working on specific monitoring priorities for the Ecological Reserves it owns within the MHCP planning area, including San Elijo Lagoon, Batiquitos Lagoon, Agua Hedionda Lagoon, Buena Vista Lagoon, and Carlsbad Highlands.

D. Internal and Regional Database Development

The SCR is currently in the process of developing its own in-house Access database to house the monitoring information collected on its lands within the MSCP, as well as other portions of the SCR. This database will be linked to an ArcView-based Geographical Information System (GIS) which will allow for display of maps and other geographical information. Location data, as well as changes in species or habitat distribution and abundance, will be stored for analysis of MSCP preserve efficacy, management purposes, and public information. The SCR is also developing the ability to collect field data using hand-held "Palm Pilots." This data recording mechanism will provide greater efficiency in transferring field data to the database, and reduce errors in entry of data into the computer.

The Department is working with other NCCP collaborators and experts to develop a region-wide biological database to house the monitoring data collected by the different parties involved in the NCCP program in southern California. This database would be the repository of regional monitoring data, allow for large scale biological analyses to assess the status of the regional habitat preserve system, provide opportunities for research, and provide general information to the public on the biological resources of southern California. Whether the regional database is housed at one facility or in multiple facilities that are accessible to one another is currently undecided. It is anticipated that the database would eventually be available to interested parties through the World Wide Web. There is currently a pilot study being funded by the Department to create a framework for such a regional database. Through a contract with the San Diego State University Field Station program and the USGS, this framework is under development using an existing herpetological data set collected over the past five years in southern California.